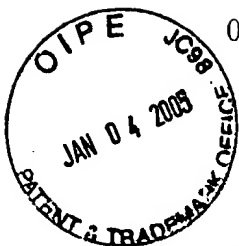


*FW*

03500.014928

PATENT APPLICATION



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                                  |   |                      |
|----------------------------------|---|----------------------|
| In re Application of:            | ) |                      |
|                                  | : | Examiner: S. Patel   |
| Nobutaka MIYAKE                  | ) |                      |
|                                  | : | Group Art Unit: 2621 |
| Appln. No.: 09/711,956           | ) |                      |
|                                  | : |                      |
| Filed: November 15, 2000         | ) |                      |
|                                  | : |                      |
| For: IMAGE PROCESSING APPARATUS, | ) | January 4, 2005      |
| METHOD AND MEMORY MEDIUM         | : |                      |
| THEREFOR                         | ) |                      |

Mail Stop Amendment  
Commissioner For Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

REQUEST FOR RECONSIDERATION

Sir:

In response to the Office Action dated October 4, 2004, Applicant requests favorable reconsideration and allowance of this application in view of the following remarks.

Claims 1-44 are pending in this application, with Claims 1, 21, 41, 43, and 44 being independent. Claims 43 and 44 stand withdrawn from consideration.

Claims 1-16, 18-36, and 38-42 stand rejected under 35.U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,477,276 (Inoue et al.) in view of U.S. Patent No. 6,535,616 (Hayashi). Claims 17 and 37 stand rejected under 35.U.S.C. §103(a) as being unpatentable over Inoue et al. in view of Hayashi and further in view of U.S. Patent No. 5,821,986 (Yuan et al.). Applicant respectfully traverses these rejections for the reasons discussed below.

As recited in independent Claim 1, the present invention is directed to an image processing apparatus which embeds predetermined information in an image and outputs the image to a printer. Conventional apparatuses which embed predetermined information in an image suffer from the drawback that, after the image is printed, deterioration of the image occurs that makes it difficult to extract the embedded information from the printed image. More specifically, as discussed at page 2, line 4 through page 3, line 20 of the specification (with respect to Figs. 13 & 14), assume that additional information B has been added to image information A to form multiplexed information C. In a conventional apparatus, multiplexed information C is subjected to a pseudo gradation process that converts the data to quantized information D. When the quantized information D is printed, the image information is significantly deteriorated and the extraction of the additional information B is very difficult.

The present invention recited in independent Claim 1 is directed to solving the aforementioned problem. It does so by including, *inter alia*, the feature of controlling a quantization condition by a pseudo gradation process means according to predetermined

information to be embedded, and causing in a unit of an image area, to generate a pattern in which a dot arrangement is different according to the predetermined information on an image output as a print. With this feature, the quantization performed by the pseudo gradation process in preparing the image data for printing is controlled in accordance with the predetermined information to be embedded. As a result, the information embedded in the image can be extracted from the image output as a print.

Applicant submits that the cited art fails to disclose or suggest at least the above-mentioned feature of the present invention recited in independent Claim 1. Inoue et al. discloses that predetermined information is embedded in a frequency band of an image. In particular, that patent discloses that a mean value  $M_x$  within a block is calculated, a linear quantization value  $q$  is obtained from the mean value  $M_x$ , adding/subtracting is performed with respect to the obtained quantization value  $q$  in accordance with information to be embedded, and the information is embedded. However, the quantization disclosed in Inoue et al. is not a quantization performed in a pseudo gradation process. Instead, the quantization in that patent is used to embed information in image data independent of whether the image is to be output as a print. Accordingly, if such an image is output as a print, the system of Inoue et al. would suffer from the same drawback of conventional apparatuses discussed above. Namely, when the image data is subjected to processing for printing and then actually printed, the image is deteriorated and the embedded information is significantly changed, whereby it is difficult to extract the embedded information from the printed image.

The Examiner cites Hayashi et al. as disclosing a pseudo gradation process. However, Applicant respectfully submits that that patent likewise fails to disclose or suggest at least the claimed feature of controlling a quantization condition *by a pseudo*

*gradation process means* according to predetermined information to be embedded.

Instead, Hayashi et al. discloses a system that would suffer the same drawback as Inoue et al. or the conventional apparatuses discussed as related background art in Applicant's specification. Specifically, Hayashi et al. discloses that an image is divided into blocks and an embedding pattern is embedded in each block by variably controlling the pattern to be embedded. While that patent does disclose that the image data in which the digital watermark has been embedded is printed, it merely discloses printing of image data in which the predetermined information has already been embedded. Hayashi et al. does not disclose or suggest controlling the quantization condition when the image data is quantized in a pseudo gradation process in accordance with information to be embedded. Thus, when the pseudo gradation process is performed in Hayashi et al. on the image data in which the predetermined information has already been embedded, the information will be significantly changed and it will be difficult to extract the information after the image is printed.

In summary, while the cited art discloses quantization of data, and while Hayashi et al. discloses use of a pseudo gradation process, the quantization controlled in the cited art is not the quantization performed in the pseudo gradation process. None of the cited art, alone or in combination, discloses or suggests at least the feature of controlling a quantization condition of a pseudo gradation process in accordance with information to be embedded.

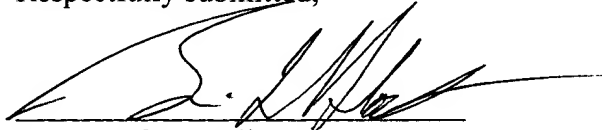
For the foregoing reasons, Applicant submits that the present invention recited in independent Claim 1 is patentable over the cited art, whether that art is considered individually or taken in combination. Independent Claims 21 and 41 recite similar features and are believed patentable for similar reasons. The dependent claims are patentable for at

least the same reasons as the independent claims they depend from, as well as for the additional features they recite.

For the foregoing reasons, Applicant submits that this application is in condition for allowance. Favorable reconsideration, withdrawal of the outstanding rejections, and an early Notice of Allowance are earnestly solicited.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below-listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'B. L. Klock', is written over a horizontal line.

Attorney for Applicant

Brian L. Klock

Registration No. 36,570

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